

# Energy efficient upgrade with fuel substitution solution



**One Source**

## **CASE: Salanit Anhovo in Slovenia**

Set in an idyllic river valley near a national park, Salanit Anhovo gives priority to the local community and environment while adapting its facility to more efficient technology.

# Two-stage upgrade increases capacity and energy efficiency

**FLSmidth provided a robust, flexible solution, first upgrading the clinker cooler and then the preheater with a calciner suitable for alternative fuel**



### The objective

As part of a 10-year reconstruction plan, Saloniit Anhovo wanted to upgrade and modernise its plant, which at that time was a traditional suspension preheater kiln with a planetary cooler. Greater operating reliability, energy efficiency and high environmental standards were important objectives for Anhovo.

### Defining the project

In the spring of 2005, Anhovo asked FLSmidth to conduct an end-to-end upgrade study of its cement plant based on FLSmidth's many years of experience and reputation as a reliable partner. The study suggested several solutions for removing bottlenecks and upgrading equipment.

### The solution

The FLSmidth and Saloniit Anhovo project teams worked closely together to upgrade the pyro system in two steps. With the long-term intent of upgrading the preheater with a calciner suitable for alternative fuel use, the first phase began by upgrading the clinker cooler to an efficient Cross-Bar™ cooler prepared to supply the calciner with hot tertiary air.

A high degree of substitution with alternative fuels was an important requirement for an upgraded preheater. The ILC Preheater system was chosen for its good performance with all fuels and for a design incorporating a high-temperature zone, low-NOX operation and extended residence time. A HOTDISC™ combustion device was also added to the calciner to enable the use of coarse and lumpy fuels. The HOTDISC™ can, for example, burn whole tyres achieving a substitution of more than 50% of the calciner fuel.

In the second phase, the new preheater was built in front of the existing tower, and the rotary kiln was shortened to position the kiln inlet directly below the HOTDISC™ and calciner.

### Challenges

Due to high market demand at the time, a crucial concern for Anhovo was to keep production shutdown to a minimum. Furthermore, the one-line plant layout put some serious restrictions on the space available for upgrade equipment. Through mutual effort and a high level of knowledge exchange, a solution was devised that works efficiently and consistently – with the flexibility to even further expand output.

The new Cross-Bar™ cooler supplies the calciner with hot tertiary air and is more efficient than the previous clinker cooler. ▼



**Results**

Kiln output has increased from 2,100 tpd prior to the upgrade to 3,500 tpd. The HOTDISC™ has achieved fuel substitution with more than 5 tph of whole tires (>60% of the calciner heat input). “What was very important for us was the technologically advanced equipment, the HOTDISC™,” says Mr. Ivan Vidic, technical director for Saloniit Anhovo. “We found it very interesting, and we were ready to take the risk of trying it. The HOTDISC™ started within hours of installation and immediately went into production. After three years it still has a lot of reserve possibilities – we haven’t reached the limit yet.”

**A successful collaboration**

The project has combined FLSmidth’s experience and advanced kiln designs with Saloniit Anhovo’s requirements to achieve state-of-the art solutions. Both FLSmidth and Anhovo are intent on continuing the collaboration to pursue further developments and increase fuel substitution. The next stages are to further increase the use of coarse RDF (Refuse Derived Fuel) alternative fuels and add a kiln gas bypass to purge the kiln system of the accumulating chlorides. The collected bypass dust may be used as filler in the cement or in construction.



Anhovo upgraded their traditional suspension preheater kiln into a modern In-Line Calciner (ILC) Preheater system, chosen for its good performance with all fuels.

**“WE WERE LOOKING FOR A PARTNER THAT COULD SUPPORT US WITH FURTHER TECHNOLOGICAL DEVELOPMENT. FLSMIDTH PROVIDED US WITH A LOT OF KNOWLEDGE, A LOT OF NEW INFORMATION. COOPERATION BETWEEN THE PROJECT TEAMS WAS VERY POSITIVE.”**

Mr. Ivan Vidic, Technical Director, Saloniit Anhovo



The HOTDISC™ is capable of treating alternative fuel in all shapes and sizes – in Anhovo’s case, whole tyres.

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